6450-01-P

DEPARTMENT OF ENERGY

10 CFR Part 490

Office of Energy Efficiency and Renewable Energy

[Docket No. EE-RM-98-PURE]

Alternative Fuel Transportation Program; P-series fuels

AGENCY: Department of Energy (DOE)

ACTION: Notice of proposed rulemaking and opportunity for public comment.

SUMMARY: In response to a petition filed by Pure Energy Corporation, DOE proposes to amend the rules for the statutory program requiring certain alternative fuel providers and State government fleets to acquire an annually increasing percentage of alternative fueled vehicles from among their purchases of new light duty vehicles. The proposed regulatory amendments would add certain blends of methyltetrahydrofuran, ethanol and hydrocarbons known as the P-series fuels to the definition of "alternative fuel."

DATES: Written comments, eight (8) copies, must be received by DOE by [insert date 60 days from the date of publication.]

ADDRESSES:

Written comments should be addressed to: U.S. Department of Energy, Office of Transportation Technologies, EE-34, Docket No. EE-RM-98-PURE, 1000 Independence Avenue, SW, Washington, DC 20585, telephone (202) 586-3012. Copies of the Pure Energy Corporation petition for rulemaking, analyses of the petition by national laboratories, written comments received, technical reference materials mentioned in this notice, and any other documents related to this rulemaking may be

read and copied at the DOE Freedom of Information Reading Room, Room 1E-190, 1000 Independence Avenue, SW, Washington, DC 20585, telephone (202) 586-3142, between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays. The docket file material will be filed under EE-RM-98-PURE.

For more information concerning public participation in this rulemaking proceeding, see section III of this notice (Public Comment Procedures).

FOR FURTHER INFORMATION CONTACT:

Kenneth R. Katz, Office of Energy Efficiency and Renewable Energy, (EE-34), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, D.C. 20585, (202) 586-9171.

For information concerning submission of written comments and to obtain copies of materials referenced in this notice, contact Andi Kasarsky, (202) 586-3012.

SUPPLEMENTARY INFORMATION:

I. Introduction and Background

A. Fuel Characteristics

Pure Energy Corporation has petitioned DOE for a rulemaking to add its proprietary fuel products to the definition of "alternative fuels" under the Alternative Fuel Transportation Program (Program) regulations (10 CFR part 490). Pure Energy Corporation's P-series fuels are blends of ethanol, methyltetrahydrofuran (MTHF), and pentanes plus, with butane added for blends that would be used in severe cold-weather conditions to meet cold start requirements. It is anticipated that both the ethanol and the MTHF will be derived from renewable resources, such as waste cellulosic biomass that can be derived from waste paper, agricultural waste and urban/industrial wood

waste. Pure Energy Corporation plans to use pentanes plus that are derived from the processing and production of natural gas, as opposed to those derived from refining processes. Pure Energy Corporation holds the exclusive worldwide license to manufacture and distribute the P-series fuels, which were developed by Dr. Stephen Paul of Princeton University. The P-series fuels were awarded Patent number 5,697,987 by the United States Patent and Trademark Office on December 16, 1997. DOE's evaluation of Pure Energy Corporation's petition is restricted to those formulations covered under this patent.

To make the P-series fuels, Pure Energy Corporation will be producing ethanol and MTHF through an integrated production process. Pure Energy Corporation expects to utilize commercially proven concentrated acid hydrolysis processing as its base technology for this integrated production process. MTHF is currently produced in limited quantities from furfural (derived from both biomass and petroleum feedstocks) for use as a specialty chemical in consumer end products and/or process industries. Pure Energy Corporation has developed a thermochemical technology to produce MTHF from cellulosic feedstocks through a levulinic acid pathway, integrating it with an ethanol production system to achieve technical and economic efficiencies. In this process, the lignocellulosic feedstock is converted into both five- and six-carbon sugars, which are then bifurcated into fermentation and thermochemical pathways to produce ethanol and MTHF, respectively.

Pure Energy Corporation has developed several fuel formulations for the P-series fuels. Pure Energy Corporation proposes to vary the components of its P-series fuels to meet particular market demands. The formulations described in Table 1 are those for which Pure Energy Corporation, in its petition, provided specific energy and emission data. Pure Energy Corporation claims that the volumetric percentages of each of the components of the P-series fuels can range from 10 percent to 50 percent for pentanes plus; from 15 percent to 55 percent for MTHF; from 25 percent to 55

percent for ethanol; and from zero to 15 percent for normal butane. However, data was not provided to DOE for fuel formulations that incorporate the entire blending range. Data was provided to DOE only for the three specific formulations discussed in this notice. Table 1 provides the compositions, by volume, of the three P-series fuel formulations which are the subject of Pure Energy Corporation's petition for rulemaking.

Table 1

Volume Composition of the P-series Fuels			
Constituent	Regular	Premium	Cold Weather
Pentanes plus	32.5	27.5	16.0
MTHF	32.5	17.5	26.0
ethanol	35.0	55.0	47.0
normal butane	0	0	11.0

Pure Energy Corporation claims that its P-series fuels are from 60 to 100 percent non-petroleum, on an energy basis, depending on the source of the pentanes plus and n-butane components of the blends.

Pure Energy Corporation proposes to market the P-series fuels for flexible fuel vehicles (FFVs) originally designed to operate on E-85 (85 percent ethanol/15 percent gasoline), on gasoline, or on any blend of those two fuels. Flexible fuel vehicles are currently available from two major domestic auto manufacturers as mid-size sedans and minivans. In the near future, a large number of minivans and compact pickup trucks will be produced as flexible-fuel vehicles by these two domestic manufacturers.

B. Patent

On December 16, 1997, the United States Patent and Trademark Office issued U.S. Patent No. 5,697,987, titled Alternative Fuel, to Princeton University on a new, non-petroleum substitute for gasoline called the P-series. The abstract for this patent reads:

> A spark ignition motor fuel composition consisting essentially of: a hydrocarbon component containing one or more hydrocarbons selected from five to eight carbon atoms straight-chained or branched alkanes essentially free of olefins, aromatics, benzene and sulfur, wherein the hydrocarbon component has a minimum anti-knock index of 65 as measured by ASTM D-2699 and D-2700 and a maximum DVPE of 15 psi as measured by ASTM D-5191; a fuel grade alcohol; and a co-solvent for the hydrocarbon component and the fuel grade alcohol; wherein the hydrocarbon component, the fuel grade alcohol and the co-solvent are present in amounts selected to provide a motor fuel with a minimum anti-knock index of 87 as measured by ASTM D2699 and D-2700, and a maximum DVPE of 15 psi as measured by ASTM D-5191. A method for lowering the vapor pressure of a hydrocarbon-alcohol blend by adding a co-solvent for the hydrocarbon and the alcohol to the blend is also disclosed.

C. Background

10 CFR part 490 sets forth the regulations that implement title V of the Energy Policy Act 1992 (EPACT) (Public Law 102-486) which mandates alternative fueled vehicle acquisition requirements for certain alternative fuel providers and State government fleets. Part 490 is one of a variety of EPACT programs to promote alternative and replacement fuels that reduce reliance on imported oil, reduce criteria pollutant and greenhouse gas emissions, increase energy efficiency, and help displace

10 percent and 30 percent of conventional motor fuels by 2000 and 2010, respectively.

Title III of EPACT requires Federal fleet acquisitions of alternative fueled vehicles. Title IV includes specific authority for a financial incentive program for States, a public information program, and a program for certifying alternative fueled vehicle technician training programs. In addition to the mandates for the purchase of alternative fueled vehicles by certain alternative fuel providers and State government fleets, title V provides for a possible similar mandate for certain private and municipal fleets. Title VI provides for a program to promote electric motor vehicles.

The types of vehicles that satisfy the alternative fuel provider and State government fleet mandates in title V are determined in part by the definition of "alternative fuel" in section 301(2). That definition provides: "'Alternative fuel' means methanol, denatured ethanol, and other alcohols; mixtures containing 85 percent or more (or such other percentage, but not less than 70 percent, as determined by the Secretary, by rule, to provide for requirements relating to cold start, safety, or vehicle functions) by volume of methanol, denatured ethanol , and other alcohols with gasoline or other fuels; natural gas; liquefied petroleum gas; hydrogen; coal-derived liquid fuels; fuels (other than alcohol) derived from biological materials; electricity (including electricity from solar energy); **and any other fuel the Secretary determines, by rule, is substantially not petroleum, and would yield substantial energy security benefits and substantial environmental benefits.**" [Emphasis added.] 42 U.S.C. 13211(2). The P-series fuels do not fit within the classes of eligible fuels specifically named in section 301(2). The emphasized phrase in the definition of "alternative fuel" states the minimum procedural and substantive requirements for adding a new fuel blend to the list of fuels enumerated or implicitly covered by the provisions of section 301(2).

In the rulemaking to establish 10 CFR part 490, DOE concluded that Congress deliberately omitted reformulated gasoline (RFG) from the definition of "alternative fuel"

in section 301(2) of the Act. The basis for this conclusion was explained in a final rule at 61 FR 10622 (March 14, 1996). The relatively small percentage of non-petroleum content in RFG was an important consideration in that explanation.

For reasons set forth in detail below, DOE proposes to determine that the P-series fuels, as described by United States Patent number 5,697,987, which contain at least 60 percent non-petroleum energy content derived from MTHF (manufactured solely from biomass feedstocks) and ethanol, are substantially not petroleum and would yield substantial energy security and substantial environmental benefits, and thus should be added to the definition of "alternative fuel" in 10 CFR 490.2.

II. Statutory Criteria for Designating Additional Alternative Fuels

Neither section 301(2) nor any other provision of EPACT states specifically or indicates how to measure whether a new fuel: (1) is "substantially not petroleum" and (2) would yield "substantial energy security benefits;" and (3) would yield "substantial environmental benefits." Moreover, these criteria do not purport to be exclusive, and in appropriate circumstances, DOE could consider other criteria related to achievement of the purposes of the Program.

Legislative committee report language likewise does not identify *specifically* what numbers and measures Congress viewed as defining the minimum that would qualify as substantially not petroleum, substantial energy security, and substantial environmental benefits. However, the report of the House Committee on Energy and Commerce described the pertinent language in section 301(2) as providing "...the Secretary with the *opportunity* to add alternative and replacement fuels that are not now being marketed to those specifically identified in the legislation." [Emphasis added.] H.R. Rep. No. 474(1), 102nd Cong., 2nd Sess., 182, *reprinted in* 1992 U.S. Code Cong. & Admin. News 2005. The word "opportunity" suggests that the authority to add fuels to

the definition of "alternative fuel" is largely discretionary.

A. Substantially Not Petroleum

Any standard dictionary or thesaurus indicates that "substantially" is an adverb that can be used to convey a variety of subtly different meanings. "Substantially" is sometimes used as a synonym for the word "mainly." At other times, it is used as a synonym for the words "considerably" or "importantly." *See, e.g., Webster's New World Thesaurus* 725 (Simon & Schuster, 1985). The former is a more narrow usage because the word "mainly" means the principal and predominant portion of a whole. (Obviously, a fuel that is more than 50 percent non-petroleum in energy equivalent terms is "mainly" and therefore "substantially not petroleum.") The latter usage is broader because a less than principal or predominant portion of the whole could still be large enough to be regarded as "considerable" or "important." Whether to construe " substantially" narrowly or broadly is a policy question. Since the petition does not involve fuels that are less than 50 percent non-petroleum, in terms of energy content, it is unnecessary to address this policy question in this rulemaking.

Section 502(b) of the Act establishes goals for replacing the projected consumption of motor fuel in the U.S. on an energy equivalent basis. The goals provided by this section are that 10% of the motor fuel consumed by 2000 and 30% of the motor fuel consumed by 2010 will be replacement fuels. These goals are the driving force for all the alternative and replacement fuel provisions in the Act. Because the achievement of these goals is to be measured on an energy equivalent basis, DOE believes that when evaluating a fuel, the determination of whether it is "substantially not petroleum" should be based on an analysis of the fuel's non-petroleum energy content, rather than a volumetric analysis of the fuel's non-petroleum content.

Pure Energy Corporation claims that, on an energy basis, its P-series fuels will

be at least 60 percent derived, and may be 100 percent derived, from non-petroleum sources, depending on the source of the light hydrocarbons in the blends. In its petition, the Pure Energy Corporation provided DOE with information and analysis to substantiate these claims, and DOE had the National Renewable Energy Laboratory (NREL) review those data. NREL confirmed the accuracy of Pure Energy Corporation's claim regarding the energy-based, non-petroleum content of the P-series fuels. Table 2 summarizes the worst-case (lowest non-petroleum) makeup of the three P-series fuel formulations, based on the net (lower) heating value of all constituents.

Table 2

Verified Non-petroleum Energy Content of the P-series Fuels			
Constituent	Regular	Premium	Cold Weather
Pentanes plus	36.2%	33.3%	19.1%
MTHF	37.7%	22.1%	32.3%
ethanol	26.1%	44.6%	37.5%
normal butane	0.0%	0.0%	11.2%
Non-petroleum	**63.8%**	**66.7%**	**69.8%**

It is evident to DOE that the MTHF (manufactured from biomass feedstock) and the ethanol in the P-series fuels are non-petroleum. However it is less clear as to whether the pentanes plus component is non-petroleum. The Department of Energy's Energy Information Administration (EIA), in its publication *Annual Energy Review 1996, 386* ((DOE/EIA-0384(96)) defines "pentanes plus" as "a mixture of hydrocarbons, mostly pentanes and heavier, extracted from natural gas. [This] includes isopentane, natural gasoline, and plant condensate." This same publication also defines petroleum products as including "unfinished oils, liquefied petroleum gases, **pentanes plus**, aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel,

kerosene, distillate fuel oil, residual fuel oil, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt, road oil, still gas, and miscellaneous products." Ibid. However, it is unnecessary to determine whether to restrict pentanes plus on the basis of source because the MTHF (manufactured from biomass feedstock) and ethanol, which are present in all three fuel blends, result in a non-petroleum energy content for the P-series formulations of at least 63.8 percent. That percentage is the main or predominant portion of the fuel, and even under the narrow definition of "substantially," the three fuel blends are "substantially not petroleum."

Because U.S. Patent number 5,697,987, does not specifically define the composition of the P-series fuels, DOE has determined that the fuels need to be more specifically described before they can be added to the regulatory definition of " alternative fuel." Given that the petition shows that the P-series fuels will be at least 60 percent derived from non-petroleum sources, DOE will be using that percentage as a way of more narrowly defining the P-series fuels, yet allowing some variability in the blend components and blend levels. DOE also believes that the amount of MTHF and ethanol in the fuels will result in a non-petroleum content of at least 60 percent for the P-series fuels, absent any other non-petroleum component, if the MTHF is manufactured solely from biomass feedstock. Since 60 percent represents the main or predominant portion of the P-series fuels covered by the petition for rulemaking, DOE proposes to determine that they are "substantially not petroleum" under section 301(2) of the Act.

B. Substantial Energy Security Benefits

Pure Energy Corporation claims in its petition that the P-series fuels are 100 percent domestic and capable of displacing gasoline on essentially a gallon-for-gallon

basis. Pure Energy Corporation notes that each gallon of the P-series fuel directly displaces 0.88 gallons of RFG in vehicle use. Pure Energy Corporation also states that the energy required to produce a one gallon equivalent of the fuel is approximately 13,800 BTUs less than that required to produce one gallon of RFG.

The petition provides information to support a claim that the production of the P-series fuels results in a positive energy balance. The process efficiency (BTUs produced per BTU of input) of the P-series fuels is approximately 2.25 when the ethanol is produced from renewable resources, such as biomass. If, however, the ethanol is produced from corn, the process efficiency is slightly lower, with a value between 1.75 and 1.88. Although the process efficiency is slightly lower when the ethanol is derived from corn, production of ethanol from either feedstock represents a significant energy savings for the life cycle of the fuel.

DOE has had NREL and Argonne National Laboratory (ANL) examine these claims. The analyses, "Review of Pure Energy Petition for Alternative Fuel Status" (NREL) and "Assessment of Fuel-Cycle Energy Use and Greenhouse Gas Emissions of Pure Energy's Proprietary Motor Fuel" (ANL) can be reviewed at DOE's Freedom of Information Reading Room under Docket Number EE-RM-98-PURE. These analyses support Pure Energy Corporation's claim of significant petroleum displacement, although NREL found Pure Energy Corporation's claim of 100 percent domestic content to be slightly high.

NREL estimated that the P-series fuels (regular grade) with pentanes plus derived from natural gas would be 96 percent derived from domestic resources. NREL believes that the feedstock for ethanol and MTHF production will almost certainly be wholly domestic. NREL asserts that the feedstock for the pentanes plus and the butane will be either natural gas or petroleum. Because a portion of these feedstocks is currently and will continue to be imported, it is debatable whether the P-series fuels will ever be wholly derived from domestic resources. However, if coal gas were used as the

feedstock, the pentanes plus would be wholly derived from domestic resources. If the pentanes plus were derived from refining at oil import levels projected for 2015 (as estimated by EIA), the regular grade of the P-series fuel would still be 80 percent derived from domestic resources.

ANL estimated that the P-series fuels could reduce fossil energy use by 49 to 57 percent, relative to RFG. ANL also estimates the P-series fuels could reduce petroleum use by 79 to 81 percent, relative to RFG. These estimates are affected by some key assumptions that ANL used in its analysis. One assumption is that Pure Energy Corporation's fuel production yield per dry ton of biomass is accurate. Another one is that Pure Energy Corporation's assumption that the amount of steam and electricity required in MTHF/ethanol plants is provided by combustion of the lignin cake produced within the plants and that no net energy input is required.

On the basis of the foregoing, DOE proposes that the P-series fuels, as described by United States Patent number 5,697,987, which contain at least 60 percent non-petroleum energy content derived from MTHF (manufactured solely from biomass feedstock) and ethanol, would yield "substantial energy security benefits" as that phrase is used in section 301(2) of the Act.

C. Substantial Environmental Benefits

Pure Energy Corporation had vehicle tailpipe and evaporative emissions tests conducted by an Environmental Protection Agency (EPA) certified automotive test laboratory using both the current Federal testing procedure (FTP) and the US06 test. 40 CFR part 86. The US06 is a high acceleration, aggressive driving schedule developed by the EPA that is often identified as a "Supplemental FTP" driving schedule. The US06 driving cycle is ten minutes in duration and has a maximum speed of 80.3 miles per hour. This cycle was developed by EPA in conjunction with the California Air Resources Board and vehicle manufacturers. The cycle is used by EPA to set emission

standards and control emissions associated with aggressive, high-speed driving conditions not represented by the FTP.

Pure Energy Corporation's test vehicles, two 1997 Ford Taurus E-85 flexible-fuel vehicles, were operated on seven fuels: three P-series fuels (regular, premium and cold weather), E-85, Federal Certification gasoline, California Phase 2 RFG and two commercial "street" gasolines (a summer and a winter blend). The results were submitted to DOE as part of Pure Energy Corporation's petition. Pure Energy Corporation also provided an analysis of the greenhouse gas emissions associated with the production, distribution and use of the P-series fuels and compared them to those of gasoline and E-85.

Both the criteria pollutant emissions test results and the greenhouse gas analysis tend to support Pure Energy Corporation's claim of substantial environmental benefits arising from the use of the P-series fuels. Criteria emissions from the P-series fuels were consistently among the lowest of all test fuels, met Federal Tier 1 standards and statutorily provided Federal Tier 2 standards in every case, and compared favorably with those from E-85. The premium P-series fuel had better emission characteristics than the regular P-series fuel. NREL surmised that this may be due to the increased volume of ethanol in the premium fuel. With regard to non-methane hydrocarbons (NMHC) and total hydrocarbons, the P-series fuels reduced emissions by almost a third compared to Phase 2 RFG. It is worth noting that all of the fuels tested had evaporative emissions well below the evaporative emissions standard for Federal Tier 1. Table 3 summarizes the results of the Federal Test Procedure emissions results (all results in grams per mile). The numbers are averages over both cars tested and all FTP tests performed, as presented in Pure Energy Corporation's petition.

Table 3

Comparison of Federal Test Procedure Emission Results (gram/mile)

	NMHC	Carbon Monoxide	Nitrogen Oxides
Pure Regular	0.074	1.081	0.064
Pure Premium	0.064	1.062	0.059
Phase II RFG	0.115	1.247	0.039
Tier 1 standards	0.250	3.4	0.4
Tier 2 standards	0.125	1.7	0.2

The Tier 2 standards that are referenced in Table 3 are the pending standards identified by Congress in section 202(i) of the Clean Air Act (CAA). Section 202(i) of the CAA outlines a process for assessing whether more stringent exhaust emission reductions from light duty vehicles and light duty trucks should be required. Congress required EPA to report the results of this assessment. Congress identified specific standards that EPA must consider in making this assessment, but stated that the study should also consider other possible standards. These standards, referred to as "Tier 2 standards", would be more stringent than the standards required for light duty vehicles and light duty trucks in the CAA beginning in model year 1994, but could not be implemented prior to the 2004 model year.

EPA recently released a Draft Tier 2 Study and published a Notice of Document Availability regarding this document. 63 FR 23255. This study assesses the air quality need, technical feasibility and cost effectiveness of more stringent standards. It is DOE's understanding that EPA will issue the *Tier 2 Report to Congress* by July 31, 1998. Following submission of this Report to Congress, EPA will, through the rulemaking process, determine whether: there is an air quality need for further emission reductions; the technology for meeting more stringent emissions standards will be available; and whether obtaining further reductions in emissions from light duty vehicles and light duty trucks is necessary and cost effective.

As seen in Table 4, the P-series fuels had reduced emissions for ozone-forming potential (OFP), carbon monoxide and for air toxics. With regard to NOx emissions, indolene and Phase 2 RFG outperformed the P-series fuels by a small margin. However, the EPA certified test laboratory pointed out that the Taurus' engine could be adjusted to significantly reduce NOx emissions, while only slightly increasing CO and hydrocarbon emissions to levels well below the standard.

The OFP is a measure of the performance of the fuel-vehicle combination, and is calculated by multiplying the fraction of each compound in the emissions mixture by its reactivity. The specific reactivity is calculated by dividing the OFP by the mass of the non-methane organic gaseous emissions, and is considered a better gauge of the reactivity of the fuels' emissions profile. Table 4 compares the emission results of the P-series fuels, indolene, Phase 2 RFG and commercial "street" gasoline to EPA's National Ambient Air Quality Standards (NAAQS). 40 CFR part 63. The numbers are averages over both cars tested and all FTP and US06 tests performed, as presented in Pure Energy Corporation's petition.

Table 4

Comparison of emission results related to NAAQS (gram/mile)								
	CO		**NOx**		**OFP**		**Spec. React.**	
	FTP	USO6	FTP	USO6	FTP	USO6	FTP	USO6
Indo.	1.421	11.99	0.056	0.040	0.488	0.470	3.248	3.092
RFG II	1.247	10.56	0.039	0.049	0.469	0.379	3.640	3.059
Street	1.427	12.07	0.095	0.077	0.522	0.501	3.334	3.070
E85	1.218	5.15	0.056	0.079	0.494	0.087	2.410	3.633
Pure 1	1.081	6.15	0.064	0.057	0.305	0.161	3.360	3.460
Pure 2	1.062	6.23	0.059	0.081	0.282	0.158	2.849	3.568

The petition stated that the total emissions resulting from the production of the P-series fuels are 71 percent lower than those associated with the production of one gallon of Phase 2 RFG. Of note are the claims that emissions are reduced, relative to Phase 2 RFG, by more than 99 percent for methane, by 85 percent for SOx, by 71 percent for carbon dioxide and by 68 percent for nitrogen oxides.

The petition claims that the P-series fuels perform better than Phase 2 RFG or indolene in terms of direct carbon dioxide emissions and that the P-series fuels will result in significant reductions in carbon dioxide emissions when considered on a life-cycle basis. If the P-series fuels are produced from biomass, as is the desire of Pure Energy Corporation, it is claimed that a significant percent of the carbon emissions associated with the gasoline life-cycle will be avoided. Specifically, it is claimed that the P-series fuels are estimated, on a life-cycle basis, to reduce carbon dioxide emissions by at least 63 percent.

Regarding toxicity, Pure Energy Corporation claims that its P-series fuels appear to be less hazardous to human health than conventional gasoline. Based on the results of recently conducted animal studies, the P-series fuels are claimed to have lower inhalation toxicity than gasoline. It is also claimed that the P-series fuels are not skin sensitizers and are non-mutagenic/genotoxic in bacterial assays.

DOE had NREL assess the emissions test results and had ANL perform an analysis of the full fuel cycle greenhouse gas emissions of the P-series fuels. NREL confirmed that regular and premium formulations of the P-series fuels displayed carbon monoxide, nitrogen oxides and non-methane hydrocarbon equivalent emissions that met the Tier 1 and statutorily provided Tier 2 standards, and that their evaporative emissions were well below the Tier 1 standards.

The FTP and US06 testing included measurements of the four toxics associated with vehicle emissions: benzene, 1,3-butadiene, formaldehyde, and acetaldehyde. The total toxic emissions were presented, along with the potency weighted toxics (PWT)

emissions. The PWT weighs each individual component by a factor that represents its relative toxicity. NREL noted that the emissions of air toxics from the P-series fuels were lower than those from all other test fuels, both in terms of total mass emissions and in terms of their PWT. As a result, the NREL analysis indicates that the P-series fuels hold the promise of reduced toxics emissions.

ANL's evaluation of the full fuel cycle greenhouse gas emissions of the P-series fuels confirmed that, over their entire production, distribution and end-use cycle, the P-series fuels will result in greenhouse gas emissions 45 to 50 percent below those of reformulated gasoline. These reductions in greenhouse gas emissions are possible if the ethanol component of the P-series fuels is made from biomass, as is Pure Energy Corporation's intention.

On the basis of the foregoing, DOE proposes that the P-series fuels, as described by United States Patent number 5,697,987, which contain at least 60 percent non-petroleum energy content derived from MTHF (manufactured solely from biomass feedstock) and ethanol, would yield "substantial environmental" benefits as that phrase is used in section 301(2) of the Act.

III. Opportunity for Public Comment

A. Participation in Rulemaking.

Interested persons are invited to participate in this proposed rulemaking by submitting written data, views, or comments with respect to the subject set forth in this notice. Whenever applicable, full supporting rationale, data, and detailed analyses should also be submitted.

B. Written Comment Procedures

Written comments (8 copies) should be identified on the outside of the envelope,

and on the comments themselves, with the designation: "P-series Fuel Rulemaking (Docket Number EE-RM-98-PURE)" and must be received by the date specified at the beginning of this notice. In the event any person wishing to submit a written comment cannot provide eight copies, alternative arrangements may be made in advance by calling Ms. Andi Kasarsky at (202) 586-3012.

All comments received on or before the date specified at the beginning of this notice and other relevant information will be considered by DOE before final action is taken on the proposed rule. All comments submitted will be available for examination in the Rulemaking Docket File in DOE's Freedom of Information Reading Room.

Pursuant to the provisions of 10 CFR 1004.11, any person submitting information or data that is believed to be confidential, and which may be exempt by law from public disclosure, should submit one complete copy, as well as two copies from which the information claimed to be confidential has been deleted. The DOE will make its own determination of any such claim.

C. Public Hearing

In DOE's view, today's proposed rulemaking does not involve any significant issues of law or fact that would warrant holding a public hearing. Moreover, Pure Energy Corporation has not requested such a hearing, and the opportunity to file written comments should suffice for other members of the public who want DOE to considers their views. For these reasons, DOE has not provided for a public hearing in this notice. Nevertheless, if members of the public request the opportunity to make oral comments and can identify issues that would justify scheduling a public hearing, DOE will reconsider its position on holding such a hearing

IV. Regulatory and Procedural Requirements

A. Review Under Executive Order 12866

Today's regulatory action has been determined not to be a "significant regulatory action" under Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (October 4, 1993). Accordingly, this rulemaking has not been reviewed by the Office of Information and Regulatory Affairs of the Office of Management and Budget (OMB).

B. Review Under Executive Order 12612

Executive Order 12612, "Federalism," 52 FR 41685 (October 30, 1987) requires that regulations, rules, legislation and other policy actions be reviewed for any substantial direct effect on States, on the relationship between the National Government and the States, or in the distribution of power and responsibilities among various levels of government. If there are substantial effects, the Executive Order requires the preparation of a federalism assessment to be used in all decisions involved in promulgating and implementing policy action. DOE has analyzed this rulemaking in accordance with the principles and criteria contained in Executive Order 12612, and has determined there are no federalism implications that would warrant the preparation of a federalism assessment. The rule proposed today would simply allow an additional fuel to qualify as an alternative fuel for the purposes of the Energy Policy Act of 1992. The proposed rule would not have a substantial direct effect on States, the relationship between the States and Federal Government, or the distribution of power and responsibilities among various levels of government.

C. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act, 5 U.S.C. 601 et seq., requires preparation of an initial regulatory flexibility analysis for every rule which by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. Today's

proposed rule would provide an additional fuel choice for organizations which must comply with the requirements of the Alternative Fuel Transportation Fuel Program (10 CFR part 490). There is no reason to anticipate any adverse impact. DOE certifies that the proposed rule, if promulgated, will not have a significant economic impact on a substantial number of small entities.

D. Review Under the National Environmental Policy Act

The proposed rule would identify the P-series fuels as "alternative fuel" as that term is defined in the Alternative Transportation Fuels Program regulations (10 CFR 490.2) and section 301(2) of the Energy Policy Act (42 U.S.C. 13211(2)). The proposed rule interprets statutory and regulatory definitions and would not change the environmental effect of the Alternative Fuel Transportation Program regulations. DOE, therefore, has determined that this proposed rule is covered under the Categorical Exclusion in paragraph A5 to Subpart D, 10 CFR part 1021. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under the Paperwork Reduction Act

No new collection of information is proposed to be imposed by this rulemaking. Accordingly, no clearance by the Office of Management and Budget is required under the Paperwork Reduction Act (44 U.S.C. 3501 et seq.).

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 61 FR 4729 (February 7, 1996), imposes on Executive agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. Section 3(b)

of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

List of Subjects in 10 CFR Part 490

Administrative practice and procedure, Energy conservation, Fuel, Motor vehicles.

Issued in Washington, DC on July 13, 1998.

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Dan W. Reicher
Assistant Secretary
Energy Efficiency and Renewable Energy

For the reasons set forth in the Preamble, Title 10, Chapter II, Subchapter D, of the Code of Federal Regulations is proposed to be amended as set forth below:

PART 490 - ALTERNATIVE FUEL TRANSPORTATION PROGRAM

1. The authority cite for Part 490 continues to read as follows: 42 U.S.C. 7191, 13211, 13235, 13251, 13257, 13258, 13260-3.

[490.2 AMENDED]

2. Section 490.2, Definitions, is amended by adding in the definition of "Alternative Fuel," the phrase, "P-series fuels as described by United States Patent number 5,697,987, dated December 16, 1997, and containing at least 60 percent non-petroleum energy content derived from methyltetrahydrofuran (manufactured solely from biomass feedstock) and ethanol," before "and electricity (including electricity from solar energy)."